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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,261	12/15/2003	Mitsugu Sato	H6808.0005/P005-A	1481

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DICKSTEIN SHAPIRO LLP  
1825 EYE STREET NW  
Washington, DC 20006-5403

EXAMINER
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JOHNSTON, PHILLIP A

ART UNIT	PAPER NUMBER
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2881

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/13/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/734,261

Applicant(s)

SATO ET AL.

Examiner

Phillip A. Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**Detailed Action**

1. This Office Action is submitted in response to the RCE amendment filed 1-22-2007, wherein claims 24 and 34 have been amended. Claims 24-34 are pending.

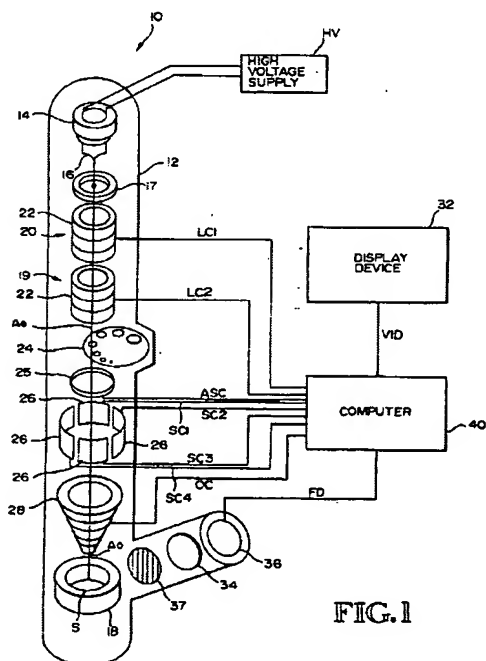
**Claims Rejection - 35 U.S. C. 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24-26, 28, 33, and 34 are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Keese, U.S. Patent No. 5, 627,373.

4. Regarding claim 24, Keese teaches scanning electron microscope 10 having electron gun 14 (the particle source), condenser lenses 19 and 20 (note Figure 1 below) alignment coils 22 (deflectors), astigmatism coil 25, and objective lens 28 (optical element), which focuses the beam onto specimen S. See Col. 4, line 23-44.



Keese also teaches controlling microscope 10 with computer 40 (control device), which automatically varies the focus of objective lens 28 between extremes of the focal range (a variation of an operation condition), then image processing circuit 46 detects and generates image translation signals IND (a two-dimensional deviation between images) from which the amount of beam alignment correction is calculated with control circuit 50, and supplied to the alignment coils as signals LC1 and LC2 (a parameter of each alignment coil) for adjusting electron beam alignment. Col. 5, line 38-62.

Keese further teaches that the alignment proceeds in an iterative manner, which stops when the difference in magnitude of the IND image translation signals (a two-dimensional deviation between images) is less than a prescribed threshold, for example 5 pixels out of 500 pixels (nearly zero) in each dimensional direction of the images compared. Col. 7, line 20-36.

5. Regarding claims 25 and 26, the rational applied above to claim 24, also applies to claims 25 and 26, wherein Keese teaches detecting the amount of image translation as the objective lens focus is varied and calculates corrections (an unknown number) to the beam alignment.

6. Regarding claim 28, the rational applied above to claim 24, also applies to claim 28, wherein Keese teaches that the control circuit stores, analyzes, and calculates corrections to beam alignment from the IND signal.

7. Regarding claim 33, the rational applied above to claim 24, also applies to claim 33, wherein Keese teaches objective lens 28 is an optical element for focusing the electron beam and astigmatism coil 25 for correcting astigmatism.

8. Regarding claim 34, the rational applied above to claim 24, also applies to the structural limitations of claim 34.

***Claims Rejection – 35 U.S.C. 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 27, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,627,373 to Keese.

11. Regarding claim 27, Keese teaches all the required limitations of claim 27, as pointed out with respect to claim 24 above, but fails to teach calculating a coefficient for determining the condition of the alignment deflector. However it would have been obvious to one of ordinary skill in the art that performing calculations with control circuit 50 to determine the relationship between the amount of image translation and beam alignment would include calculating a coefficient since such calculations are commonly performed in the art.

12. Regarding claims 29-31, Keese teaches all the required limitations of claim 27, as pointed out with respect to claim 24 above, but fails to teach the presence or absence of structure information necessary for calculating the amount of deviation of the image. In construing claims 29-31, the examiner has utilized paragraph [0063] of the specification to define "structure information" as an arrangement or a structure which is capable of controlling a beam passage position two-dimensionally at least in a main plane of the objective lens, and from this the examiner has interpreted that detection of the presence or absence of "structure information" is detection of the presence or absence of alignment coil current (excitation current), which is associated with the magnitude of image translation or two dimensional deviation of the image.

As a result, the examiner takes Official Notice that the use of current detection in alignment coils is well known in the art. See USPN 4,654,506 to Sakamoto et al. Therefore it would have been obvious to utilize current sensing in the alignment apparatus of Keese to provide beam correction.

13. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,627,373 to Keese, in view of Onoguchi, U.S. Patent No. 6,067,164.

14. Regarding claim 32, Keese teaches all the required limitations of claim 32, as pointed out with respect to claims 29-31 above.

15. Keese fails to teach the use of a two-dimensional Fourier transform to quantify the image.

16. Onoguchi teaches an astigmatism correction apparatus for correcting an astigmatism in an electron optics device that utilizes a Fourier transform unit to obtain a binarized image.

17. Onoguchi modifies Keese to provide a Fourier transformed image from which an adjustment unit for adjusting the stigmater of the charged particle beam optical system according to the intensity and the direction of the astigmatism determined by the astigmatism information calculation unit. See Column 4, line 65-67; Column 5, line 1-25; Column 19, line 51-67; and Column 20, line 1-3.

18. Therefore it would have been obvious to one of ordinary skill in the art that the electron beam alignment correction apparatus and method of Keese can be modified to use the Fourier transform in accordance with Onoguchi, to provide an astigmatism correction apparatus for correcting an astigmatism in an electron optics device by adjusting a stigmater of a charged particle beam optical system in the electron optics device.

### ***Conclusion***

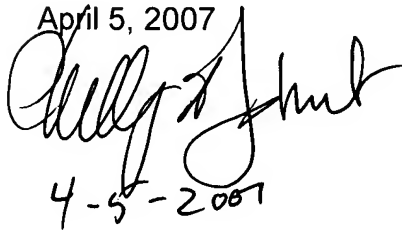
19. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor Robert Kim

can be reached at (571)272-231-2293. The fax phone number for the organization where the application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

April 5, 2007



4-5-2007